

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 10-063378

(43)Date of publication of application : 06.03.1998

(51)Int.Cl. G06F 1/26

G06F 1/28

G06F 1/30

G06F 13/00

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(22) Date of filing : 27.08.1996 (72) Inventor : KUBOTA HIDEKI

(54) POWER CONTROLLER, POWER CONTROL SYSTEM, POWER CONTROL METHOD AND STORAGE MEDIUM STORING POWER CONTROL PROGRAM

(57) Abstract:

PROBLEM TO BE SOLVED: To specify the cause of a failure where a distributed computer does not normally work despite application of its AC power supply by managing both AC and DC power supply states and the communication state of the distributed computer based on a power supply state table and notifying a host computer of those said states of the computer.

SOLUTION: A control part 15 instructs an AC power control part 14 to apply the AC power supply of a distributed computer 20 that is instructed by a host computer 1. At the same time, it's decided whether the power application result given from the part 14 is normal or not. Then the decided normal or abnormal result is recorded in the AC power supply state area of a power supply state

table 16. In the same way, the normal or abnormal results of the DC power supply state and the communication state are recorded in the DC power supply and communication state areas of the table 16 respectively. Thus, the AC and DC power supply state and the communication state of the computer 20 are managed via the table 16 and these states are notified to the computer 1.

LEGAL STATUS [Date of request for examination] 27.08.1996

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number] 2877091

[Date of registration] 22.01.1999

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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CLAIMS

[Claim(s)]

[Claim 1] While being the power control which controls a power source between a host computer and a distributed computer and receiving powering-on directions from said host computer With the host communications department which transmits the powering-on result of said distributed computer to said host computer While receiving said powering-on directions from said host communications department including the power-source condition table which memorizes the AC power condition, DC power supply condition, and communication link condition of said distributed computer The control section

which notifies said host communications department of the AC power condition, DC power supply condition, and communication link condition of said distributed computer memorized on said power-source condition table as a powering-on result of said distributed computer, AC power control section which will supply an AC power to said distributed computer, and will notify an AC power condition to said control section if said powering-on directions are received from said control section, Power control characterized by having the communications control section which receives communication link directions from said control section, performs the communication link with said distributed computer, and notifies a communication link condition to said control section, and DC detecting element which receives DC electrical-potential-difference value from said distributed computer, and notifies a DC power supply condition to said control section.

[Claim 2] It is the power control system which consists of power control which controls a power source between a host computer, a distributed computer, and this host computer and this distributed computer. While said power control receives powering-on directions from said host computer With the 1st host communications department which transmits the powering-on result of said distributed computer to said host computer While receiving said powering-on directions from said 1st host communications department including the

power-source condition table which memorizes the AC power condition, DC power supply condition, and communication link condition of said distributed computer. The control section which notifies said 1st host communications department of the AC power condition, DC power supply condition, and communication link condition of said distributed computer memorized on said power-source condition table as a powering-on result of said distributed computer, AC power control section which will supply an AC power to said distributed computer, and will notify an AC power condition to said control section if said powering-on directions are received from said control section. The 1st communications control section which receives communication link directions from said control section, performs the communication link with said distributed computer, and notifies a communication link condition to said control section, DC electrical-potential-difference value is received from said distributed computer, and it has DC detecting element which notifies a DC power supply condition to said control section. Said distributed computer The 2nd communications control section which communicates between the 2nd host communications department which performs the communication link with said host computer, and said 1st communications control section of said power control, While supplying said DC power supply which AC power supply section

which receives the injection of said AC power from said AC power control section of said power control, and changes said AC power into a DC power supply, and said AC power supply section changed The power control system characterized by equipping said DC detecting element of said power control with the DC power supply feed zone which notifies DC electrical-potential-difference value.

[Claim 3] While being the power control approach which controls a power source between a host computer and a distributed computer and receiving powering-on directions from said host computer The host communication link step which transmits the powering-on result of said distributed computer to said host computer, While memorizing the AC power condition, DC power supply condition, and communication link condition of said distributed computer, receiving said powering-on directions from said host communication link step and being passed The control step which delivers the AC power condition, DC power supply condition, and communication link condition of said said memorized distributed computer to said host communication link step as a powering-on result of said distributed computer, AC power control step which will supply an AC power to said distributed computer, and will deliver an AC power condition to said control step if said powering-on directions are received from

said control step and it is passed, The communications control step which receives communication link directions from said control step, is passed, performs the communication link with said distributed computer, and delivers a communication link condition to said control step, The power control approach characterized by including DC detection step which receives DC electrical-potential-difference value from said distributed computer, and delivers a DC power supply condition to said control step.

[Claim 4] While receiving powering-on directions from said host computer to the power control which controls a power source between a host computer and a distributed computer The host communication link step which transmits the powering-on result of said distributed computer to said host computer, While memorizing the AC power condition, DC power supply condition, and communication link condition of said distributed computer, receiving said powering-on directions from said host communication link step and being passed The control step which delivers the AC power condition, DC power supply condition, and communication link condition of said said memorized distributed computer to said host communication link step as a powering-on result of said distributed computer, AC power control step which will supply an AC power to said distributed computer, and will deliver an AC power condition to

said control step if said powering-on directions are received from said control step and it is passed, The communications control step which receives communication link directions from said control step, is passed, performs the communication link with said distributed computer, and delivers a communication link condition to said control step, The storage characterized by memorizing the computer program which performs DC detection step which receives DC electrical-potential-difference value from said distributed computer, and delivers a DC power supply condition to said control step.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the storage which memorized the power control which supervises the subsequent power-source condition and subsequent communication link condition of a distributed computer, the power control system, the power control approach, and the program for power control while carrying out the automatic injection of the power source of a distributed

computer.

[0002]

[Description of the Prior Art] In the on-line system in a bank etc., a host computer and the distributed computer installed in the remote place are connected by the communication line, and it is applied in many cases. However, it is not economically easy to dispatch an operator to all the distributed computers of such a remote place, and it has been an important technical problem to ensure full automation employment of each distributed computer installed in the above-mentioned remote place.

[0003] As one of the approaches for realizing such full automation employment, it is possible to carry out the automatic injection of the power source of the distributed computer of a remote place. There is a system which was indicated by JP,62-97443,A as a system which carries out the automatic injection of the power source of the distributed computer of a remote place.

[0004]

[Problem(s) to be Solved by the Invention] however, in spite of having switched on the AC power supply (an AC power is called hereafter) of a distributed computer, when normal operation is not carried out in the above-mentioned Prior art Since the communication link condition of having not carried out normal

operation since the DC power supply (a DC power supply is called hereafter) of a distributed computer were not switched on, or a distributed computer was unusual, there was a trouble that the cause whether normal operation has been carried out could not be specified.

[0005] Since the purpose of this invention has the unusual communication link condition of having not carried out normal operation since a DC power supply was not switched on when normal operation is not carried out, in spite of having switched on the AC power of a distributed computer, or a distributed computer, it is to offer the storage which memorized the power control which can specify the cause whether normal operation has been carried out, the power control system, the power control approach, and the program for power control.

[0006]

[Means for Solving the Problem] While the power control of this invention is power control which controls a power source between a host computer and a distributed computer and receiving powering-on directions from said host computer With the host communications department which transmits the powering-on result of said distributed computer to said host computer While receiving said powering-on directions from said host communications department including the power-source condition table which memorizes the AC

power condition, DC power supply condition, and communication link condition of said distributed computer. The control section which notifies said host communications department of the AC power condition, DC power supply condition, and communication link condition of said distributed computer memorized on said power-source condition table as a powering-on result of said distributed computer, AC power control section which will supply an AC power to said distributed computer, and will notify an AC power condition to said control section if said powering-on directions are received from said control section. Communication link directions were received from said control section, the communication link with said distributed computer was performed, and it has the communications control section which notifies a communication link condition to said control section, and DC detecting element which receives DC electrical-potential-difference value from said distributed computer, and notifies a DC power supply condition to said control section.

[0007] The power control system of this invention A host computer and a distributed computer, It is the power control system which consists of power control which controls a power source between this host computer and this distributed computer. Said power control With the 1st host communications department which transmits the powering-on result of said distributed computer

to said host computer while receiving powering-on directions from said host computer. While receiving said powering-on directions from said 1st host communications department including the power-source condition table which memorizes the AC power condition, DC power supply condition, and communication link condition of said distributed computer. The control section which notifies said 1st host communications department of the AC power condition, DC power supply condition, and communication link condition of said distributed computer memorized on said power-source condition table as a powering-on result of said distributed computer, AC power control section which will supply an AC power to said distributed computer, and will notify an AC power condition to said control section if said powering-on directions are received from said control section. The 1st communications control section which receives communication link directions from said control section, performs the communication link with said distributed computer, and notifies a communication link condition to said control section, DC electrical-potential-difference value is received from said distributed computer, and it has DC detecting element which notifies a DC power supply condition to said control section. Said distributed computer. The 2nd communications control section which communicates between the 2nd host communications department which performs the

communication link with said host computer, and said 1st communications control section of said power control, While supplying said DC power supply which AC power supply section which receives the injection of said AC power from said AC power control section of said power control, and changes said AC power into a DC power supply, and said AC power supply section changed Said DC detecting element of said power control is equipped with the DC power supply feed zone which notifies DC electrical-potential-difference value.

[0008] While the power control approach of this invention is the power control approach which controls a power source between a host computer and a distributed computer and receiving powering-on directions from said host computer The host communication link step which transmits the powering-on result of said distributed computer to said host computer, While memorizing the AC power condition, DC power supply condition, and communication link condition of said distributed computer, receiving said powering-on directions from said host communication link step and being passed The control step which delivers the AC power condition, DC power supply condition, and communication link condition of said said memorized distributed computer to said host communication link step as a powering-on result of said distributed computer, AC power control step which will supply an AC power to said

distributed computer, and will deliver an AC power condition to said control step if said powering-on directions are received from said control step and it is passed, The communications control step which receives communication link directions from said control step, is passed, performs the communication link with said distributed computer, and delivers a communication link condition to said control step, DC electrical-potential-difference value is received from said distributed computer, and DC detection step which delivers a DC power supply condition to said control step is included.

[0009] While the storage of this invention receives powering-on directions from said host computer to the power control which controls a power source between a host computer and a distributed computer The host communication link step which transmits the powering-on result of said distributed computer to said host computer, While memorizing the AC power condition, DC power supply condition, and communication link condition of said distributed computer, receiving said powering-on directions from said host communication link step and being passed The control step which delivers the AC power condition, DC power supply condition, and communication link condition of said said memorized distributed computer to said host communication link step as a powering-on result of said distributed computer, AC power control step which will

supply an AC power to said distributed computer, and will deliver an AC power condition to said control step if said powering-on directions are received from said control step and it is passed, The communications control step which receives communication link directions from said control step, is passed, performs the communication link with said distributed computer, and delivers a communication link condition to said control step, DC electrical-potential-difference value was received from said distributed computer, and the computer program which performs DC detection step which delivers a DC power supply condition to said control step is memorized.

[0010]

[Embodiment of the Invention] Next, the gestalt of operation of this invention is explained to a detail with reference to a drawing.

[0011] Reference of drawing 1 constitutes the gestalt of operation of the power control system of this invention from a host computer 1, power control 10 of this invention, and a distributed computer 20.

[0012] With the host communications department 11 which performs the communication link with a host computer 1 in power control 10 The communications control section 12 which performs the communication link with a distributed computer 20, and the DC detecting element 13 which detects that

the power source of a distributed computer 20 was switched on and the DC power supply was supplied, AC power control section 14 which controls the AC power of a distributed computer 20, The control section 15 which performs the directions from a host computer 1 and performs the notice of a condition to a host computer 1, The power-source condition table 16 which records the power-source condition and communication link condition of a distributed computer 20 is contained. To a distributed computer 20 The host communications department 21 which performs the communication link with a host computer 1, and the communications control section 22 which performs the communication link with power control 10, The DC power supply feed zone 23 which will supply a DC power supply and will notify DC electrical-potential-difference value to power control 10 if an AC power is supplied to a distributed computer 20, and the AC power supply section 24 which holds the AC power supplied from power control 10 are included.

[0013] Here, the detail of the function of each component in power control 10 is as follows.

[0014] The host communications department 11 has communication facility with a host computer 1, notifies to a control section 15 that the powering-on directions from a host computer 1 are received, receives the notice of a condition

addressed to host computer 1 from a control section 15, and transmits to a host computer 1.

[0015] The communications control section 12 will start the communication link with the communications control section 22 of a distributed computer 20, if communication link initiation is directed from a control section 15. The retry of the communication link is carried out at fixed spacing, and it notifies communication link normal or the abnormalities in a communication link to a control section 15.

[0016] If the DC detecting element 13 has the function to detect the electrical-potential-difference value of a DC power supply from the DC power supply feed zone 23 of a distributed computer 20 and the electrical-potential-difference value beyond a fixed value is detected, it will judge that the DC power supply of a distributed computer 20 is supplied, and it notifies DC power supply normal to a control section 15, and the abnormalities in a DC power supply are notified to a control section 15 that an electrical-potential-difference value falls.

[0017] If AC current supply is directed from a control section 15, AC power control section 14 notifies AC power normal to a control section 15 that the AC power supplied from a panelboard is supplied to a distributed computer 20, and

an AC power is supplied normally, and when an AC power is not supplied by panelboard failure or breaker ** of a panelboard from a panelboard, it will notify AC powerfail to a control section 15.

[0018] A control section 15 directs communication link initiation in the communications control section 12 at the same time it receives the powering-on directions from the host computer 1 which the host communications department 11 received and directs AC current supply in AC power control section 14. And a condition is recorded on the power-source condition table 16 by the notice from the communications control section 12, the DC detecting element 13, and AC power control section 14, and this condition of having been recorded is notified to a host computer 1.

[0019] Moreover, the detail of the function of each component in a distributed computer 20 is as follows.

[0020] The host communications department 21 has communication facility with a host computer 1, and starts a communication link by the connection request from a host computer 1.

[0021] The communications control section 22 will answer to the communication link from the communications control section 12 of power control 10, if the AC power of a distributed computer 20 is switched on and a DC power supply is

supplied from the DC power supply feed zone 23.

[0022] The DC power supply feed zone 23 supplies the DC power supply changed in the AC power supply section 24 to each equipment and the DC detecting element 12 in a distributed computer 20.

[0023] The AC power supply section 24 changes an AC power into a DC power supply, and delivers to the DC power supply feed zone 23.

[0024] Next, actuation centering on the control section 15 of the gestalt of operation of this invention is explained to a detail with reference to drawing 1 - drawing 2 .

[0025] If drawing 2 is referred to, a control section 15 will judge whether they are powering-on directions, when there are waiting (step 201) and directions about the directions from a host computer 1 (step 202). When it is not powering-on directions, it returns to step 201 and waits for the directions from a host computer 1 again.

[0026] When the directions from a host computer 1 are powering-on directions, a control section 15 performs powering-on directions in AC power control section 14 so that the AC power of the distributed computer 20 which the host computer 1 directed may be switched on (step 203). It judges (step 204), and if normal, it will record whether at this time, the powering-on result from AC power control

section 14 is normal on the AC power condition area of the power-source status management table 16 as it is normal (step 205). Moreover, if unusual, it will record that it is unusual on the AC power condition area of the power-source status management table 16 (step 206).

[0027] Next, it judges (step 207), a control section 15 asks the DC power supply condition of a distributed computer 20 to the DC detecting element 13, if normal, it will record whether a DC power supply condition is normal on the DC power supply condition area of the power-source condition table 16 as it is normal (step 208), and if unusual, it will record that it is unusual on the DC power supply condition area of the power-source condition table 16 (step 209).

[0028] Furthermore, it judges (step 210), a control section 15 asks a communication link condition with a distributed computer 20 to the communications control section 12, if normal, it will record whether a communication link condition is normal on the communication link condition area of the power-source condition table 16 as it is normal (step 211), and if unusual, it will record that it is unusual on the communication link condition area of the power-source condition table 16 (step 212).

[0029] And a control section 15 reads the AC power condition in the power-source status management table 16, a DC power supply condition, and a

communication link condition, respectively, notifies them to a host computer 1 as a result of powering-on directions (step 213), and waits for the directions from a host computer 1 again.

[0030] Actuation of the gestalt of operation of this invention is completed by the above.

[0031] The gestalt of this operation by managing the AC power condition, DC power supply condition, and communication link condition of a distributed computer on a power-source condition table, and having notified these to the host computer 1 in spite of having switched on the AC power of a distributed computer, when normal operation is not carried out. Since the communication link condition of having not carried out normal operation since a DC power supply was not switched on, or a distributed computer is unusual, it has the effectiveness that the cause whether normal operation has been carried out can be specified.

[0032]

[Effect of the Invention] As explained above, in spite of having switched on the AC power of a distributed computer, when normal operation is not carried out, since the communication link condition of having not carried out normal operation since a DC power supply was not switched on, or a distributed

computer is unusual, there is effectiveness that the cause whether normal operation has been carried out can be specified in this invention.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] Drawing 1 is the block diagram showing the configuration of the gestalt of operation of this invention.

[Drawing 2] Drawing 2 is the flow chart showing actuation of the control section 15 in the gestalt of operation of this invention.

[Description of Notations]

1 Host Computer

10 Power Control

11 Host Communications Department

12 Communications Control Section

13 DC Detecting Element

14 AC Power Control Section

15 Control Section

16 Power-Source Status Management Table

20 Distributed Computer

21 Host Communications Department

22 Communications Control Section

23 DC Power Supply Feed Zone

24 AC Power Supply Section

(19)日本国特許庁 (JP)

(12) 公開特許公報 (A)

(11)特許出願公開番号

特開平10-63378

(43)公開日 平成10年(1998)3月6日

(51)Int.Cl. ⁶	識別記号	序内整理番号	F I	技術表示箇所
G 0 6 F 1/26			G 0 6 F 1/00	3 3 4 H
1/28			13/00	3 5 5
1/30			1/00	3 3 3 A
13/00	3 5 5			3 4 1 X

審査請求 有 請求項の数4 O.L (全7頁)

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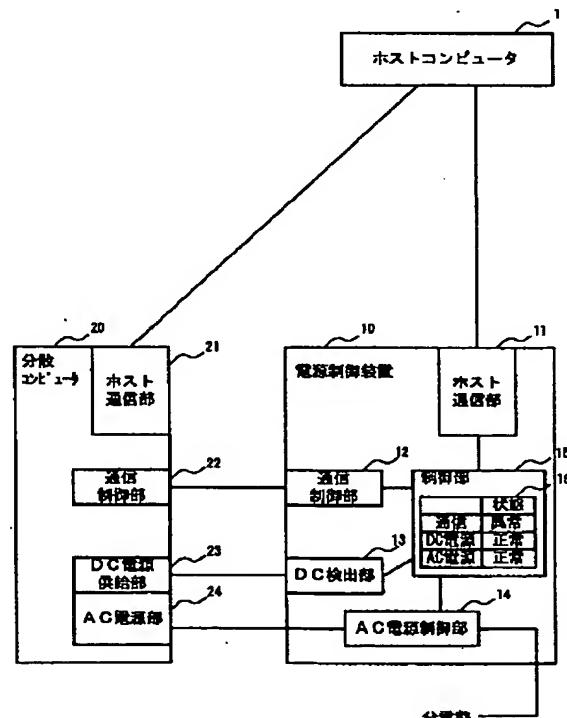
(54)【発明の名称】 電源制御装置、電源制御システム、電源制御方法およびラムを記憶した記憶媒体

電源制御用プログ

(57)【要約】

【課題】分散コンピュータのAC電源が投入されたにもかかわらず正常稼働しない場合に、DC電源異常か、通信異常か、といった原因を特定することができるようとする。

【解決手段】制御部が、分散コンピュータのAC電源状態、DC電源状態および通信状態を記憶する電源状態テーブルを含み、ホストコンピュータからの電源投入指示により、分散コンピュータにAC電源を投入するAC電源制御部と、分散コンピュータからDC電圧値を受信するDC検出部と、分散コンピュータとの通信を行う通信制御部とを制御する。さらに、制御部は、AC電源制御部、DC検出部、通信制御部から通知されたAC電源状態、DC電源状態および通信状態を電源状態テーブルに記憶し、これを、ホスト通信部が、ホストコンピュータに通知する。



【特許請求の範囲】

【請求項1】 ホストコンピュータと分散コンピュータとの間で電源の制御を行う電源制御装置であって、前記ホストコンピュータから電源投入指示を受信するとともに、前記分散コンピュータに対する電源投入結果を前記ホストコンピュータへ送信するホスト通信部と、前記分散コンピュータのA C電源状態、D C電源状態および通信状態を記憶する電源状態テーブルを含み、前記ホスト通信部から前記電源投入指示を受信するとともに、前記電源状態テーブルに記憶した前記分散コンピュータのA C電源状態、D C電源状態および通信状態を、前記分散コンピュータに対する電源投入結果として前記ホスト通信部に通知する制御部と、前記制御部から前記電源投入指示を受信すると、前記分散コンピュータにA C電源を投入し、A C電源状態を前記制御部に通知するA C電源制御部と、前記制御部から通信指示を受信して前記分散コンピュータとの通信を行い、通信状態を前記制御部に通知する通信制御部と、前記分散コンピュータからD C電圧値を受信し、D C電源状態を前記制御部に通知するD C検出部とを備えたことを特徴とする電源制御装置。

【請求項2】 ホストコンピュータと、分散コンピュータと、該ホストコンピュータと該分散コンピュータとの間で電源の制御を行う電源制御装置とからなる電源制御システムであって、

前記電源制御装置は、

前記ホストコンピュータから電源投入指示を受信するとともに、前記分散コンピュータに対する電源投入結果を前記ホストコンピュータへ送信する第1のホスト通信部と、

前記分散コンピュータのA C電源状態、D C電源状態および通信状態を記憶する電源状態テーブルを含み、前記第1のホスト通信部から前記電源投入指示を受信するとともに、前記電源状態テーブルに記憶した前記分散コンピュータのA C電源状態、D C電源状態および通信状態を、前記分散コンピュータに対する電源投入結果として前記第1のホスト通信部に通知する制御部と、

前記制御部から前記電源投入指示を受信すると、前記分散コンピュータにA C電源を投入し、A C電源状態を前記制御部に通知するA C電源制御部と、

前記制御部から通信指示を受信して前記分散コンピュータとの通信を行い、通信状態を前記制御部に通知する第1の通信制御部と、

前記分散コンピュータからD C電圧値を受信し、D C電源状態を前記制御部に通知するD C検出部とを備え、

前記分散コンピュータは、

前記ホストコンピュータとの通信を行う第2のホスト通信部と、

前記電源制御装置の前記第1の通信制御部との間で通信

を行う第2の通信制御部と、

前記電源制御装置の前記A C電源制御部から前記A C電源の投入を受け、前記A C電源をD C電源に変換するA C電源部と、前記A C電源部が変換した前記D C電源を供給するとともに、前記電源制御装置の前記D C検出部にD C電圧値を通知するD C電源供給部とを備えたことを特徴とする電源制御システム。

【請求項3】 ホストコンピュータと分散コンピュータとの間で電源の制御を行う電源制御方法であって、前記ホストコンピュータから電源投入指示を受信するとともに、前記分散コンピュータに対する電源投入結果を前記ホストコンピュータへ送信するホスト通信ステップと、

前記分散コンピュータのA C電源状態、D C電源状態および通信状態を記憶しておき、前記ホスト通信ステップから前記電源投入指示を受け渡されるとともに、前記記憶した前記分散コンピュータのA C電源状態、D C電源状態および通信状態を、前記分散コンピュータに対する電源投入結果として前記ホスト通信ステップに受け渡す制御ステップと、

前記制御ステップから前記電源投入指示を受け渡されると、前記分散コンピュータにA C電源を投入し、A C電源状態を前記制御ステップに受け渡すA C電源制御ステップと、

前記制御ステップから通信指示を受け渡され前記分散コンピュータとの通信を行い、通信状態を前記制御ステップに受け渡す通信制御ステップと、

前記分散コンピュータからD C電圧値を受信し、D C電源状態を前記制御ステップに受け渡すD C検出ステップとを含むことを特徴とする電源制御方法。

【請求項4】 ホストコンピュータと分散コンピュータとの間で電源の制御を行う電源制御装置に、

前記ホストコンピュータから電源投入指示を受信するとともに、前記分散コンピュータに対する電源投入結果を前記ホストコンピュータへ送信するホスト通信ステップと、

前記分散コンピュータのA C電源状態、D C電源状態および通信状態を記憶しておき、前記ホスト通信ステップから前記電源投入指示を受け渡されるとともに、前記記憶した前記分散コンピュータのA C電源状態、D C電源状態および通信状態を、前記分散コンピュータに対する電源投入結果として前記ホスト通信ステップに受け渡す制御ステップと、

前記制御ステップから前記電源投入指示を受け渡されると、前記分散コンピュータにA C電源を投入し、A C電源状態を前記制御ステップに受け渡すA C電源制御ステップと、

前記制御ステップから通信指示を受け渡され前記分散コンピュータとの通信を行い、通信状態を前記制御ステッ

ブに受け渡す通信制御ステップと、前記分散コンピュータからDC電圧値を受信し、DC電源状態を前記制御ステップに受け渡すDC検出ステップと、を実行させるコンピュータプログラムを記憶したことを特徴とする記憶媒体。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、分散コンピュータの電源を自動投入するとともにその後の分散コンピュータの電源状態および通信状態を監視する電源制御装置、電源制御システム、電源制御方法および電源制御用プログラムを記憶した記憶媒体に関する。

【0002】

【従来の技術】銀行等におけるオンラインシステムでは、ホストコンピュータと遠隔地に設置された分散コンピュータとを通信回線で接続して運用されることが多い。しかし、このような遠隔地の分散コンピュータの全てに対し操作員を派遣することは経済的にも容易なことではなく、上記の遠隔地に設置された各分散コンピュータの無人化運用を確実に行なうことが重要な課題となっている。

【0003】このような無人化運用を実現するための方法の1つとして、遠隔地の分散コンピュータの電源を自動投入することが考えられる。遠隔地の分散コンピュータの電源を自動投入するシステムとしては、特開昭62-97443号公報に記載されたようなシステムがある。

【0004】

【発明が解決しようとする課題】しかしながら、上記従来の技術では、分散コンピュータの交流電源（以下、AC電源と称する）が投入されたにもかかわらず正常稼働しなかった場合には、分散コンピュータの直流電源（以下、DC電源と称する）が投入されなかったために正常稼働していないのか、あるいは分散コンピュータの通信状態が異常であるために正常稼働していないのか、といった原因を特定することができないという問題点があった。

【0005】本発明の目的は、分散コンピュータのAC電源が投入されたにもかかわらず正常稼働しなかった場合に、DC電源が投入されなかったために正常稼働していないのか、あるいは分散コンピュータの通信状態が異常であるために正常稼働していないのか、といった原因を特定することが可能な電源制御装置、電源制御システム、電源制御方法および電源制御用プログラムを記憶した記憶媒体を提供することにある。

【0006】

【課題を解決するための手段】本発明の電源制御装置は、ホストコンピュータと分散コンピュータとの間で電源の制御を行う電源制御装置であって、前記ホストコン

ピュータから電源投入指示を受信するとともに、前記分散コンピュータに対する電源投入結果を前記ホストコンピュータへ送信するホスト通信部と、前記分散コンピュータのAC電源状態、DC電源状態および通信状態を記憶する電源状態テーブルを含み、前記ホスト通信部から前記電源投入指示を受信するとともに、前記電源状態テーブルに記憶した前記分散コンピュータのAC電源状態、DC電源状態および通信状態を、前記分散コンピュータに対する電源投入結果として前記ホスト通信部に通知する制御部と、前記制御部から前記電源投入指示を受信すると、前記分散コンピュータにAC電源を投入し、AC電源状態を前記制御部に通知するAC電源制御部と、前記制御部から通信指示を受信して前記分散コンピュータとの通信を行い、通信状態を前記制御部に通知する通信制御部と、前記分散コンピュータからDC電圧値を受信し、DC電源状態を前記制御部に通知するDC検出部とを備えている。

【0007】本発明の電源制御システムは、ホストコンピュータと、分散コンピュータと、該ホストコンピュータと該分散コンピュータとの間で電源の制御を行う電源制御装置とからなる電源制御システムであって、前記電源制御装置は、前記ホストコンピュータから電源投入指示を受信するとともに、前記分散コンピュータに対する電源投入結果を前記ホストコンピュータへ送信する第1のホスト通信部と、前記分散コンピュータのAC電源状態、DC電源状態および通信状態を記憶する電源状態テーブルを含み、前記第1のホスト通信部から前記電源投入指示を受信するとともに、前記電源状態テーブルに記憶した前記分散コンピュータのAC電源状態、DC電源状態および通信状態を、前記分散コンピュータに対する電源投入結果として前記第1のホスト通信部に通知する制御部と、前記制御部から前記電源投入指示を受信すると、前記分散コンピュータにAC電源を投入し、AC電源状態を前記制御部に通知するAC電源制御部と、前記制御部から通信指示を受信して前記分散コンピュータとの通信を行い、通信状態を前記制御部に通知する第1の通信制御部と、前記分散コンピュータからDC電圧値を受信し、DC電源状態を前記制御部に通知するDC検出部とを備え、前記分散コンピュータは、前記ホストコンピュータとの通信を行う第2のホスト通信部と、前記電源制御装置の前記第1の通信制御部との間で通信を行う第2の通信制御部と、前記電源制御装置の前記AC電源制御部から前記AC電源の投入を受け、前記AC電源をDC電源に変換するAC電源部と、前記AC電源部が変換した前記DC電源を供給するとともに、前記電源制御装置の前記DC検出部にDC電圧値を通知するDC電源供給部とを備えている。

【0008】本発明の電源制御方法は、ホストコンピュータと分散コンピュータとの間で電源の制御を行う電源制御方法であって、前記ホストコンピュータから電源投

入指示を受信するとともに、前記分散コンピュータに対する電源投入結果を前記ホストコンピュータへ送信するホスト通信ステップと、前記分散コンピュータのAC電源状態、DC電源状態および通信状態を記憶しておき、前記ホスト通信ステップから前記電源投入指示を受け渡されるとともに、前記記憶した前記分散コンピュータのAC電源状態、DC電源状態および通信状態を、前記分散コンピュータに対する電源投入結果として前記ホスト通信ステップに受け渡す制御ステップと、前記制御ステップから前記電源投入指示を受け渡されると、前記分散コンピュータにAC電源を投入し、AC電源状態を前記制御ステップに受け渡すAC電源制御ステップと、前記制御ステップから通信指示を受け渡され前記分散コンピュータとの通信を行い、通信状態を前記制御ステップに受け渡す通信制御ステップと、前記分散コンピュータからDC電圧値を受信し、DC電源状態を前記制御ステップに受け渡すDC検出ステップとを含んでいる。

【0009】本発明の記憶媒体は、ホストコンピュータと分散コンピュータとの間で電源の制御を行う電源制御装置に、前記ホストコンピュータから電源投入指示を受信するとともに、前記分散コンピュータに対する電源投入結果を前記ホストコンピュータへ送信するホスト通信ステップと、前記分散コンピュータのAC電源状態、DC電源状態および通信状態を記憶しておき、前記ホスト通信ステップから前記電源投入指示を受け渡されるとともに、前記記憶した前記分散コンピュータのAC電源状態、DC電源状態および通信状態を、前記分散コンピュータに対する電源投入結果として前記ホスト通信ステップに受け渡す制御ステップと、前記制御ステップから前記電源投入指示を受け渡されると、前記分散コンピュータにAC電源を投入し、AC電源状態を前記制御ステップに受け渡すAC電源制御ステップと、前記制御ステップから通信指示を受け渡され前記分散コンピュータとの通信を行い、通信状態を前記制御ステップに受け渡す通信制御ステップと、前記分散コンピュータからDC電圧値を受信し、DC電源状態を前記制御ステップに受け渡すDC検出ステップと、を実行させるコンピュータプログラムを記憶している。

【0010】

【発明の実施の形態】次に、本発明の実施の形態について図面を参照して詳細に説明する。

【0011】図1を参照すると、本発明の電源制御システムの実施の形態は、ホストコンピュータ1と、本発明の電源制御装置10と、分散コンピュータ20とから構成される。

【0012】電源制御装置10には、ホストコンピュータ1との通信を行うホスト通信部11と、分散コンピュータ20との通信を行う通信制御部12と、分散コンピュータ20の電源が投入されDC電源が供給されたことを検出するDC検出部13と、分散コンピュータ20の

AC電源を制御するAC電源制御部14と、ホストコンピュータ1からの指示を実行しホストコンピュータ1宛に状態通知を行う制御部15と、分散コンピュータ20の電源状態および通信状態を記録する電源状態テーブル16とが含まれ、分散コンピュータ20には、ホストコンピュータ1との通信を行うホスト通信部21と、電源制御装置10との通信を行う通信制御部22と、分散コンピュータ20にAC電源が投入されるとDC電源を供給し電源制御装置10にDC電圧値を通知するDC電源供給部23と、電源制御装置10から供給されるAC電源を収容するAC電源部24とが含まれる。

【0013】ここで、電源制御装置10内の各構成要素の機能の詳細は以下の通りである。

【0014】ホスト通信部11は、ホストコンピュータ1との通信機能を有し、ホストコンピュータ1からの電源投入指示を受信すると制御部15に通知し、制御部15からホストコンピュータ1宛の状態通知を受け取ってホストコンピュータ1へ送信する。

【0015】通信制御部12は、制御部15から通信開始が指示されると、分散コンピュータ20の通信制御部22との通信を開始する。通信は一定間隔でリトライし、通信正常か通信異常かを制御部15に通知する。

【0016】DC検出部13は、分散コンピュータ20のDC電源供給部23からDC電源の電圧値を検出する機能を有し、一定の値以上の電圧値を検出すると分散コンピュータ20のDC電源が供給されていると判断し、制御部15にDC電源正常を通知し、電圧値が低下すると制御部15にDC電源異常を通知する。

【0017】AC電源制御部14は、制御部15からAC電源供給が指示されると、分電盤から供給されるAC電源を分散コンピュータ20に供給し、正常にAC電源が供給されるとAC電源正常を制御部15に通知し、分電盤故障あるいは分電盤のブレーカー断等によりAC電源が分電盤から供給されない場合はAC電源異常を制御部15に通知する。

【0018】制御部15は、ホスト通信部11が受信したホストコンピュータ1からの電源投入指示を受け、AC電源制御部14にAC電源供給を指示すると同時に、通信制御部12に通信開始を指示する。そして、通信制御部12、DC検出部13およびAC電源制御部14からの通知により電源状態テーブル16に状態を記録し、ホストコンピュータ1にこの記録された状態の通知を行う。

【0019】また、分散コンピュータ20内の各構成要素の機能の詳細は以下の通りである。

【0020】ホスト通信部21は、ホストコンピュータ1との通信機能を有し、ホストコンピュータ1からの接続要求により通信を開始する。

【0021】通信制御部22は、分散コンピュータ20のAC電源が投入され、DC電源供給部23よりDC電

源が供給されると、電源制御装置10の通信制御部12からの通信に対して応答する。

【0022】DC電源供給部23は、AC電源部24で変換されたDC電源を分散コンピュータ20内の各装置およびDC検出部12に供給する。

【0023】AC電源部24は、AC電源をDC電源に変換し、DC電源供給部23に受け渡す。

【0024】次に、本発明の実施の形態の制御部15を中心とした動作について図1～図2を参照して詳細に説明する。

【0025】図2を参照すると、制御部15は、ホストコンピュータ1からの指示を待ち（ステップ201）、指示があった場合、電源投入指示であるか否かを判定する（ステップ202）。電源投入指示でない場合、ステップ201に戻って再度ホストコンピュータ1からの指示を待つ。

【0026】ホストコンピュータ1からの指示が電源投入指示であった場合、制御部15は、ホストコンピュータ1が指示した分散コンピュータ20のAC電源を投入するよう、AC電源制御部14に電源投入指示を行う（ステップ203）。このとき、AC電源制御部14からの電源投入結果が正常か否かを判定し（ステップ204）、正常であれば、電源状態管理テーブル16のAC電源状態エリアに正常と記録する（ステップ205）。また、異常であれば、電源状態管理テーブル16のAC電源状態エリアに異常と記録する（ステップ206）。

【0027】次に、制御部15は、DC検出部13に対し分散コンピュータ20のDC電源状態を問い合わせ、DC電源状態が正常か否かを判定し（ステップ207）、正常であれば、電源状態テーブル16のDC電源状態エリアに正常と記録し（ステップ208）、異常であれば、電源状態テーブル16のDC電源状態エリアに異常と記録する（ステップ209）。

【0028】さらに、制御部15は、通信制御部12に対し分散コンピュータ20との通信状態を問い合わせ、通信状態が正常か否かを判定し（ステップ210）、正常であれば、電源状態テーブル16の通信状態エリアに正常と記録し（ステップ211）、異常であれば、電源状態テーブル16の通信状態エリアに異常と記録する（ステップ212）。

【0029】そして、制御部15は、電源状態管理テーブル16におけるAC電源状態、DC電源状態および通

信状態をそれぞれ読み込み、ホストコンピュータ1に電源投入指示の結果として通知し（ステップ213）、再度ホストコンピュータ1からの指示を待つ。

【0030】以上により、本発明の実施の形態の動作が終了する。

【0031】本実施の形態は、電源状態テーブルで分散コンピュータのAC電源状態、DC電源状態および通信状態を管理し、これらをホストコンピュータに通知するようにしたことにより、分散コンピュータのAC電源が投入されたにもかかわらず正常稼働しなかった場合に、DC電源が投入されなかったために正常稼働していないのか、あるいは分散コンピュータの通信状態が異常であるために正常稼働していないのか、といった原因を特定することができるという効果を有している。

【0032】

【発明の効果】以上説明したように、本発明には、分散コンピュータのAC電源が投入されたにもかかわらず正常稼働しなかった場合に、DC電源が投入されなかったために正常稼働していないのか、あるいは分散コンピュータの通信状態が異常であるために正常稼働していないのか、といった原因を特定することができるという効果がある。

【図面の簡単な説明】

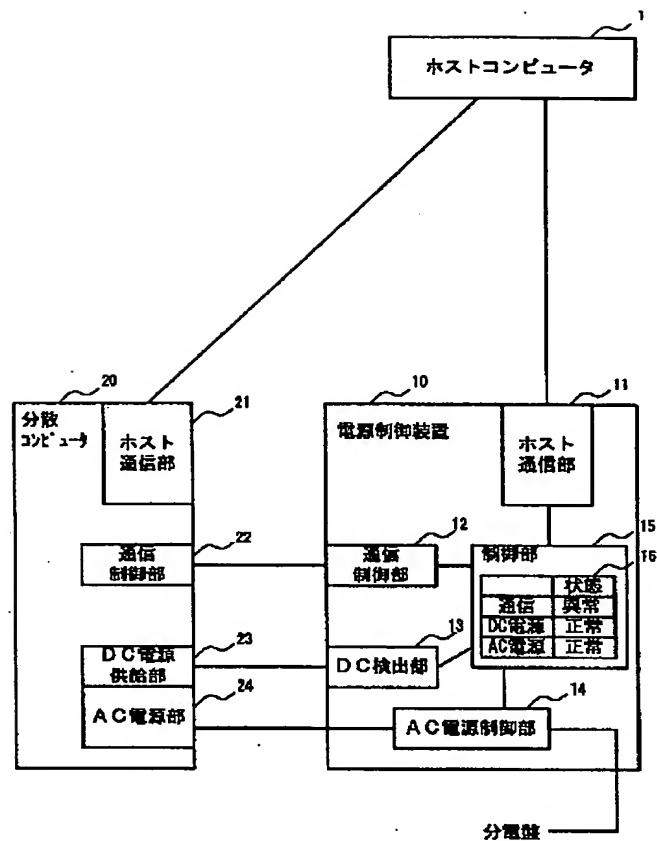
【図1】図1は本発明の実施の形態の構成を示すブロック図である。

【図2】図2は本発明の実施の形態における制御部15の動作を示す流れ図である。

【符号の説明】

1	ホストコンピュータ
10	電源制御装置
11	ホスト通信部
12	通信制御部
13	DC検出部
14	AC電源制御部
15	制御部
16	電源状態管理テーブル
20	分散コンピュータ
21	ホスト通信部
22	通信制御部
23	DC電源供給部
24	AC電源部

【図 1】



【図2】

